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# An unexpected error in oxygen humidifier

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Sir,

Oxygen is an important and essential gas for all living beings. Many different techniques are used to deliver oxygen to patients either to treat pathological conditions or to supplement during the perioperative period.[1] Equipment malfunction is a problem of particular importance during anesthesia and resuscitation.[2] Such problems hence extend from operation theater to high dependency unit (HDU) if care is not taken. Oxygen can be delivered in dry or humidified form. Advantages of supplementation of humidified oxygen are that, it prevents hypothermia, inflammation of the airway epithelium, bronchospasm, atelectasis and airway obstruction.[3] Humidified oxygen is one of the methods of delivery and commonly used in perioperative area and in HDU. Here, we share our experience of patients in the post-operative area who failed to maintain oxygen saturation which were actually preventable. Two times we observed fall in saturation in our post-operative setup in two patients one who underwent thoracotomy and other cardiac surgery. After extubation patients were conscious, oriented and pattern of breathing was acceptable. After the supplementation of oxygen at 10 L/min through simple mask, there was no improvement in saturation instead we noticed a drop in saturation from 96 (with room air) to 94% in both patients. After thorough inspection of humidifier we could see bubbles in humidifying chamber with bobbin positioned at 10 L marking with the absence of gas at output. On detailed inspection, the lid of distilled water chamber was damaged [Figure 1] in first and the leak was appreciated at the junction of the lid and input port of oxygen into the humidifying chamber [Figure 2] in the second case. The fall in saturation was due to the loss of humidified oxygen through low resistance area, i.e., through a hole in damaged lid in first and at the leaking site in the second scenario. Hence patients were actually not supplemented with humidified oxygen. Visual evidence of bubble formation in humidifying chamber and bobbin position at the set level may confirm entry of oxygen in humidifying chamber but doesn't assure delivery of oxygen to the patient. Hence, it is important to have leak proof and undamaged oxygen humidifier. The key message here is one should not jump into conclusion which may lead to invasive techniques like mechanical ventilation if saturation is not maintained, rather technical or mechanical errors should be identified and rectified. Inadequate experience and insufficient familiarity with equipment does contribute for such failure. High index of suspicion is necessary to identify such errors in the oxygen delivery devices which are most commonly practiced. It is important to have good quality medical devices and should never be a compromise in emergency and HDU.

## REFERENCES

1. St Clair N, Touch SM, Greenspan JS. Supplemental oxygen delivery to the nonventilated neonate. Neonatal Netw. 2001;20:39–46. [PubMed: 12144117]

2. Cuquemelle E, Lellouche F. Assessment of humidification performance: Still no easy method! Respir Care. 2013;58:1559–61. [PubMed: 23981591]

3. McIntyre JW. Anesthesia equipment malfunction: Origins and clinical recognition. Can Med Assoc J. 1979;120:931–4. [PMCID: PMC1819256] [PubMed: 436069]

## Figures and Tables

### Figure 1

Arrow showing damaged part in the lid

### Figure 2

Leak at the junction